

## ION AND/OR OZONE PRODUCING HAIR SETTING ASSEMBLY

## BACKGROUND OF THE INVENTION

1. Field of the Invention

5       The present invention relates to personal care appliances.  
More particularly, the present invention relates to hair setting  
assemblies for holding and heating hair rollers. Even more  
particularly, the present invention relates to a hair setting  
assembly that can generate or create a concentration of ions  
10 and/or ozone.

2. Description of the Prior Art

Hair setting assemblies for heating hair curlers are well  
known. Moreover, it is also well known to combine the beneficial  
effects of ionization with a variety of different hair care  
15 devices. See for example, U.S. Patents Nos. 6,182,671,  
5,957,090, 5,941,253, 5,150,491, 4,797,966, 4,500,939, 3,997,817,  
and 3,892,247.

None of the above provide for a hair setting assembly that  
is capable of adjustably producing ions/ozone of varying  
20 polarity, adjustably controlling the level of ion/ozone  
concentration, and adjustably manipulating the distribution and  
mix of ions/ozone with the adjacent atmosphere.

## SUMMARY OF THE INVENTION

It is an object of the present invention to provide a hair setting assembly for heating hair rollers used to curl hair.

It is another object of the present invention to provide  
5 such a hair setting assembly that can produce a concentration of ions and/or ozone.

It is still another object of the present invention to provide such a hair setting assembly that is capable of producing ions/ozone of varying polarity as well as intensity.

10 It is a further object of the present invention to provide a hair setting assembly with a tilt adjustable housing to facilitate access to the heated rollers and to direct the ion concentration.

These and other objects and advantages of the present  
15 invention are achieved by a hair setting assembly of the present invention. The hair setting assembly has a housing, one or more ion and/or ozone emitters for emitting, simultaneously or alternatively, ions/ozone of different polarity. In addition, the hair setting assembly can have any configuration and/or  
20 feature known to be associated with such conventional devices. In particular, the housing of the assembly has a split top cover or lid portion to improve thermal efficiency and enable a user to manipulate the level of ion concentration. Also, the assembly can have a base or stand connectable with a base portion of the  
25 housing such that the housing can be tilted about an axis in a

forward direction through a specified angle. This tilting action can facilitate access to the heated rollers, can reduce the risk of a user being burned, and can enable the user to direct or control the extent of the ion concentration.

## 5 BRIEF DESCRIPTION OF THE DRAWINGS

The present invention is more fully understood by reference to the following detailed description of a preferred embodiment in combination with the drawings identified below.

Fig. 1 is a front view of a hair setting assembly in  
10 accordance with a preferred embodiment of the present invention;

Fig. 2 is a first top view of the hair setting assembly of Fig. 1;

Fig. 3 is a front section view of the hair setting assembly of Fig. 1;

15 Fig. 4 is a side section view of the hair setting assembly of Fig. 1;

Fig. 5 is a side view of the hair setting assembly of Fig. 1, showing the housing in a tilted position;

Fig. 6 is a second top view of the hair setting assembly of  
20 Fig. 1, showing an arrangement of different sized hair rollers;  
and

Fig. 7 is a side view of a hair curler for use in the hair setting assembly.

## DETAILED DESCRIPTION OF THE INVENTION

Referring to the drawings and, in particular, Fig. 1, there is shown a hair setting assembly in accordance with a preferred embodiment of the present invention generally represented by reference numeral 1. Hair setting assembly 1 preferably has a housing 5 with a base portion 10, a cover portion 20 preferably pivotally connected to base portion 10, a base or stand 30, one or more ion/ozone emitters 40 for emitting ions and/or ozone, and/or one or more ion/ozone generators 50 for generating ions and/or ozone. Assembly 1 may also have one or more supports 60 for supporting the one or more heatable rollers 65.

Housing 5 preferably encloses one or more heat conductive support elements 60, shown clearly in Figs. 3, 4 and 6, that can be connected to a power source. Preferably, one or more elements 60 are arranged or tilted on edge for direct engagement with rollers 65. Preferably, as shown in Fig. 7, rollers 65 are forked over the edges of the heat conductive supports. It is noted that other configurations and adaptations may also be used to accomplish the same purposes of the arrangement just described. For example, a single heating plate provided on its top surface with one or more heat conducting elements protruding from the top surface for engagement with rollers 65 may also be used. Housing 5 can be compactly sized and/or shaped to facilitate both portability and easy storage.

Preferably, cover portion 20 is divided into at least two sections, first section 21 and second section 23, to form a split

top lid. Preferably, first section 21 is the same extent as second section 23. Cover portion 20 may also be divided into three or more sections.

Referring to Fig. 2, first section 21 preferably is  
5 pivotally connected at a first edge 12 of base portion 10 by a first connector 13, and second section 23 preferably is pivotally connected at a second edge 14 of base portion 10 by a second connector 15. Also, should cover portion 20 be divided into three or more sections, preferably each additional section would  
10 be similarly pivotally connected to a rear edge 18 of base portion 10. Preferably, first section 21 and second section 23 seal along a mid-line 16 that runs from a front edge 17 of base portion 10 to rear edge 18. First connector 13 and second connector 15 are preferably located at opposing ends of base  
15 portion 10. Should cover portion 20 include three or more sections, each of the three or more sections will preferably cooperate to cover selectively rollers 65 and/or one or more emitters 40.

Thus, the split lid arrangement heretofore described allows  
20 for selective access to rollers 65, thereby facilitating thermal efficiency, as well as providing some degree of control over the extent of ions emitted from the assembly.

Referring to Figs. 3 and 4, one or more ion/ozone emitters  
40 can be situated outside or in housing 5, or both in and  
25 outside of housing 5 simultaneously. Preferably, one or more ion/ozone emitters are in a casing 45. Casing 45 can be either

integral with housing 5 or removable to allow easy access to the one or more ion/ozone emitters 40 for cleaning and/or replacement thereof. This can be important as dust and other air particles or contaminants tend to collect on ion emitters 50 and can  
5 thereby interfere with the ionization process.

Preferably, the one or more ion/ozone emitters 40 can have any configuration suitable for emitting ions/ozone with selectively varying polarity and/or intensity, and to conform to the configuration and operation of device 1. For example, one or  
10 more ion/ozone emitters 40 can be in the form of a conductive needle, an array of such needles, a conductive plate, or any other like structure. Also, one or more ion/ozone emitters 40 can be formed from any material sufficient to effectively emit ions and/or ozone and conform to the configuration and operation  
15 of assembly 1, such as for example, a conductive metal, a conductive polymer, or a carbon material. Further, the one or more ion/ozone emitters 40 can be made of a conductive semi-fluid, such as a silicon gel. Still further, one or more ion/ozone emitters 40 preferably create(s) a concentration of  
20 ions having either a negative polarity or a positive polarity, or some combination thereof. The one or more ion/ozone emitters 40 can also preferably be arranged to create a predictable area of concentrated ions and/or ozone sufficient to encompass housing 5 and at least the area proximate the user and thereby facilitate  
25 the exposure of ions and/or ozone to the hair and/or body of the user.

It is noted that exposing roller 60 has the benefit of reducing any static electricity associated with the hair of the user, as well as a beneficial cleansing effect thereon to reduce the build up of dust and other debris and thereby maintain the useful life thereof. It is also noted that should assembly 1 employ a steaming mechanism (not shown) for providing a different styling effect, preferably one or more ion/ozone emitters 40 is/are situated to allow for the infusion or introduction of ions and/or ozone into the mist or steam generated by the steaming mechanism.

In an alternative embodiment, one or more ion/ozone ion emitters 40 can be electronically connected to one or more ion/ozone generators 50. One or more ion/ozone generators 50 can be situated in the housing 5, located outside of housing 5, or both in and outside of housing 5 simultaneously. Also, one or more ion/ozone generators 50 can be positioned at any location suitable to optimize the effective operation of assembly 1. The one or more ion/ozone generators 50 can be any suitable device. It should be capable of adjustably generating voltage outputs of varying intensity and/or polarity as well as different combinations thereof. Further, the one or more ion/ozone generators 50 and the one or more ion/ozone emitters 40 can be configured for safety, as well as for protection from damage caused by extensive use.

Referring to Fig. 5, stand 30 preferably is connected to housing 5 such that the housing can be tilted about an axis A in

a direction D, through a predetermined angle. Axis A is the axis of the height or vertical extent of the hair setting assembly 1. This tilting action facilitates access to rollers 65, reduces the risk of a user being burned, and enables the user to conveniently  
5 manipulate the direction of said emitted ions and/or ozone. Preferably, base portion 10 of housing 5 has a lower portion 31 that is shaped to rest snugly on stand 30. Preferably, lower portion 31 has at least one slidable connector that cooperates with at least two abutments to control the distance through which  
10 the connector can slide. Preferably, stand 30 has an upper surface that can receive and engage lower portion 31 via the slidable connector. Lower portion 31 and stand 30 can also provide a variety of different tilt positions. For example, stand 30 could have at least one protrusion that cooperates with  
15 one or more spring biased structures independently located between the at least two abutments of the slidable connector, to provide for the selective tilt positioning of housing 5 relative to stand 30.

Rollers 65, shown in Fig. 7, preferably have an inner casing  
20 or surface 61 of conductive material and an outer casing or surface 63 of non-conductive material. The inner surface 61 facilitates heat transfer from the conductive elements, as well as heat storage. Outer surface 63 preferably optimizes the amount and effect of heat transferred from the conductive element  
25 to enhance the hair curling effect, to allow handling by a user without the danger of burning the skin, and/or to provide a visible temperature indicator. This visible indication feature



can be accomplished using any of a variety of temperature sensitive materials. Alternatively, one or more of the one or more heatable rollers can have a heat sensitive sensor/indicator incorporated therein. Outer surface 63 can be removable and/or replaceable. Outer surface 63 may also be textured or soft to facilitate gripping and/or handling.

As clearly shown in Fig. 1, each roller 40 preferably has a non-conductive cap 62 and a tab 64. Tab 64 is at least at one end thereof to facilitate handling and further reduce the likelihood of the skin being burned. It is noted that this end cap feature can have any configuration suitable to facilitate comfortable handling of the various rollers.

The present invention having been thus described with particular reference to the preferred forms thereof, it will be obvious that various changes and modifications may be made therein without departing from the spirit and scope of the present invention as defined herein.